

*The EL-CSID project is coordinated by the Institute for European Studies (IES)*



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 693799.

# New horizons shaping science, technology and innovation diplomacy: the case of Latin America and the Caribbean and the European Union

Begoña Sánchez  
TECNALIA Research & Innovation (TECNALIA)

Issue 2018/20 • August 2018

## Abstract

Europe and the world face a moment of transformation. The global financial crisis wiped out years of economic and social progress, exposed structural weaknesses in world economies and emphasised the importance of the real economies and strong industries. Modernisation and digitalisation of the industrial base together with the promotion of a competitive framework for industry through research, technology and innovation are drivers for recovery. Innovation, and particularly open innovation, is a key factor of global competitiveness.

The European Commission (EC) addresses international cooperation policy in a wider framework and adapts to the evolving needs of partner countries at different stages of development (EC, 2018a). Latin America and the Caribbean countries' (LAC) and the European Union's (EU) cooperation on science, technology and innovation has a long history based on cultural roots and common concerns. They share a strategic bi-regional partnership, which was launched in 1999 and stepped up significantly in recent years. The two regions co-operate closely at international level across a broad range of issues and maintain an intensive political dialogue at all levels. EU-LAC relationships are moving from a traditional cooperation model towards a learning model, where sharing experiences and learning from innovations appear to be decisive (OECD, 2014).

This paper focuses on the challenges that innovation nowadays poses to international relations and diplomacy. It is based on the evidence gained by the research team from participation in several EU-LAC projects, especially the **ELAN Network** project coordinated by TECNALIA, the **INNOVACT** project as well as other projects and activities.

## Introduction and background

Europe and the world face a moment of transformation. The crisis has wiped out years of economic and social progress and exposed inherent structural weaknesses in world economies revealing the importance of robust economies and strong manufacturing industries. In the meantime, the long-term challenges of globalisation have intensified. The modernisation and digitisation of Europe's industrial base and the promotion of a competitive framework for industry through science, technology and innovation (STI) are the key drivers for recovery (EC, 2014). Innovation, digital technologies and Key Enabling Technologies (KETs) will support European industries to remain competitive and reach new markets within the framework of a new industrial revolution (the so-called **fourth industrial revolution**), which challenges “new technologies fusing the physical, digital and biological worlds impacting all disciplines, economies and industries” (K. Schawab, 2016). Industry is now also challenged by digitisation and digital technologies making innovation more collaborative, international and open. Sufficient STI capacity can also support the achievement of the United Nations Sustainable Development Goals (United Nations, 2017).

Globalisation can result in a geographic spread of economic activities, but it also allows firms and locations with specific sources of competitive advantage to exploit their advantages over ever-wider geographical areas (often, though not always, at the expense of other areas, which has created policy challenges for national and local governments). The reality is that the countries that benefitted from the **lowest cost location** principle and mass manufacturing migration are mastering the global value chains in a number of sectors (e.g. some Taiwanese, Indian, Chinese and Brazilian firms in the software and electronics sectors). Production systems and clusters in advanced countries face new competitors and lose market share. Co-operation at the global scale is needed to build capacity on STI at both national and international levels as well as an understanding of governance models of international STI collaboration (OCDE, 2012).

The forces promoting localisation include economic, sociological and innovation rationales, in line with the theories of economic geography and the notion of agglomeration forces, which explain the presence of a wide range of industrial clusters, from **Italian industrial districts** to **Silicon Valley** and **Boston's biotechnology** sector. At the same time, policies need to adapt to the new context to solve problem-specific societal challenges, where many different sectors interact. The **Smart Specialisation Strategy** and approach (**RIS3**) highlights innovation, following industrial policy priorities. Member States and regions have the possibility to direct investments to create comparative advantage, fostering the formation of cross-European value chains in the world economy. For this purpose, industry is key, as industrial interactions extend beyond manufacturing; activities are integrated in increasingly rich and complex value chains, linking flagship corporations and small or medium enterprises (SMEs) across sectors and countries. Industry and innovation need to come together to create comparative advantages through high value-added goods and services. **Smart Specialisation** is a policy approach with a place-based dimension, aiming at exploiting advantages of proximity to promote economic growth and competitiveness. RIS3 focuses on specific innovation-intensive sectors, aiming to exploit emerging linkages between economic activities that can cut across traditional cluster boundaries. And, probably most importantly, the explicit goal is the transformation of regional economies around new knowledge-based activity domains through an entrepreneurial discovery process between the public and private sectors to identify the most promising activities in which to specialise within a framework of multi-faced and multi-governance interactions.

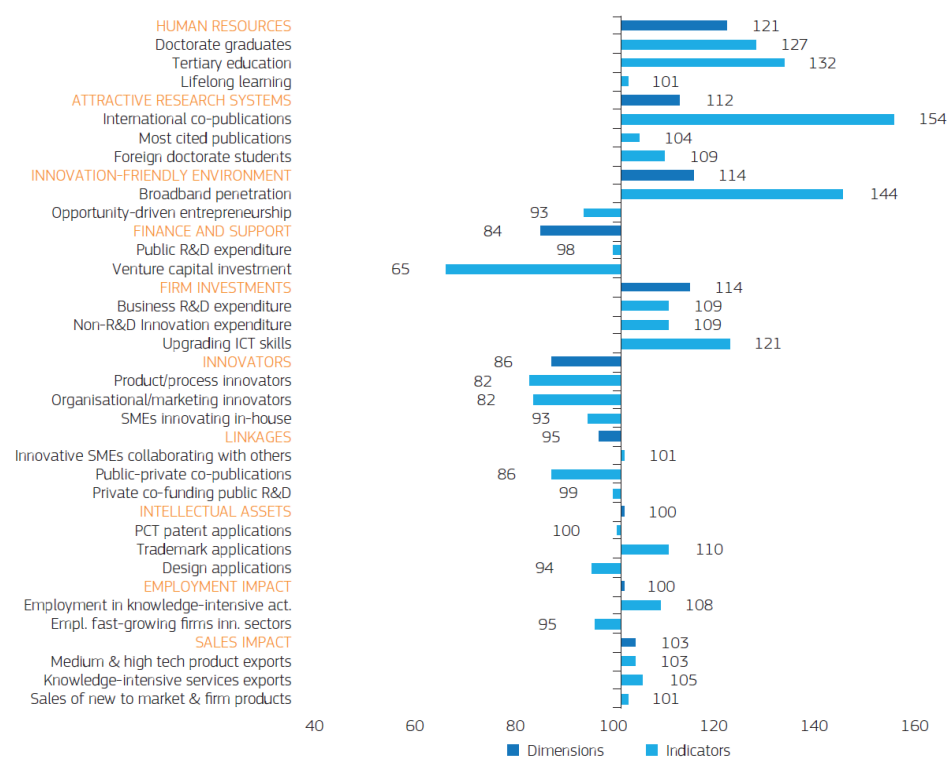
Innovation is crucial for competitiveness; it is an engine for productivity and economic growth and key to responding to global challenges in a context of profound technological and societal changes. Innovation is no longer linear, not only **market pull** or **technology push**, but resulting from an interaction between enterprise leaders, engineers, scientists and the policy makers in charge of innovation policy. The so-called **Triple Helix model** of university-industry-government relations (L. Etzkowitz & H. Leydesdorff, 1995 and 2000), “measures the extent to which innovation has become systemic instead of assuming the existence of national (or regional) systems of innovations on a priori grounds”.

Innovation generates interactions; competitiveness depends on the quality of these interactions with local and global players as well as within global value chains.

**Open innovation** is a more participatory approach to enhance companies' competitiveness using external resources to improve products and to reach markets. Competitiveness will depend on the quality of those relationships with local and global players as well as within the global value chains. The concept falls directly in that gap between business and academia. Conceptually, it is a more distributed, more participatory, more decentralised approach to innovation, based on the observed fact that useful knowledge today is widely distributed, and no company, no matter how capable or how big, could innovate effectively on its own. Chesbrough (H. Chesbrough, 2006) defined open innovation as "the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively". The concept is constantly evolving and it is moving from linear, bilateral transactions and collaborations towards dynamic, networked, multi-collaborative innovation ecosystems. A specific innovation can no longer be the result of predefined and isolated innovation activities but rather the outcome of a complex co-creation process involving knowledge flows across the entire economic and social environment. Co-creation takes place in different parts of the innovation ecosystem and requires knowledge exchange and absorptive capacities from all the actors involved, whether businesses, academia, financial institutions, public authorities or citizens.

Innovation systems and ecosystems are the natural framework for innovations to occur and expand. Nowadays, the concept of **Digital Innovation Hubs** presents an evolution of these systems, where digitisation will help SMEs to increase their competitiveness through a collaborative framework of actors localised and grouped with a concrete sectoral focus that normally involves several technologies. Performance of these innovation systems is key to understand better the type of instruments needed to reduce the gaps and suggest appropriate policies that would permit the EU to be more competitive and face global challenges better. Europe is currently in a better position according to the European Innovation Scoreboard 2017 (EC, 2017a), looking at the performance of these systems. The following chart shows the EU performance of innovation systems, between 2010-2016 by indicator. Performance has improved overall 2.0, but not equally for all indicators. **Human resources** improves by over 21% and show increases in all indicators. **Attractive research systems** also increases in all indicators, but mainly due to international scientific co-publications (54.2%), which is the indicator with the highest growth. For **Innovation-friendly environment**, increases are due to a strong improvement in broadband penetration. **Firm investments** shows an increase in all indicators but mainly due to the improvement of upgraded ICT skills. **Intellectual assets, employment impact** and **sales impact** show a modest increase while for **finance and support, innovators**, and **linkages** show decreases for all indicators.

Figure 1: Performance of innovation systems



Normalised scores in 2016 relative to those in 2010 (=100)

Source: European Innovation Scoreboard 2017

As STI has no boundaries, the European Union (EU) needs to reinforce international cooperation as well as among these innovation systems and ecosystems where innovation develops and progresses, as they become, in a globalised world, independent actors. International cooperation is a means to improve the competitiveness of research and innovation systems and boost new knowledge production and transformation in economic value worldwide. Research and innovation is global, networked and open, in line with the publication of the EC, DG Research: Open Innovation, Open Science and Open to the World (EC, 2016b). Digital technologies are not only making science and innovation more collaborative and better connected internationally but also more open to citizens. More and more actors will be involved in many ways and across disciplines, technologies and sectors and this has a direct influence on diplomacy.

## New Horizons for Diplomacy: Towards Science, Technology and Innovation Diplomacy

Diplomacy is defined as “the management of relationships between countries” (Cambridge Dictionary, 2018). It also refers to the “official channels of communication employed by the members of a system of states- network of consuls or diplomats” (GR. Berridge, M. Keens-Soper and T.G. Otter, 1994). Although it looks like the concept dates to the 15<sup>th</sup>-17<sup>th</sup> Century in Europe, previous literature is rather scarce, nor there is a unique definition. The concept of diplomacy has advanced over the years, and what is commonly accepted is that diplomacy helps to reinforce relationships and cooperation between countries; to orchestrate a dialogue among Member States; to elaborate agenda on specific and common themes and to carry out international negotiations and relationships that are conditioned by the rapid economic, political and social changes and challenges of this century. Diplomacy could be understood as an “ever-changing concept”, the same way international relations between countries fluctuate, a “product of history and society” and as countries evolve different characteristics are added (C. Amacker, 2011).

Diplomacy and public diplomacy have now reached a new stage, moving away from the periphery of the diplomatic work such as commercial diplomacy (J. Melissen, 2005), that supports business and financial affairs or science diplomacy, research and innovation diplomacy to mention some. On top of this, the rise of the involvement of and relationships between stakeholders around ecosystems is opening new opportunities and challenges globally, as these ecosystems are increasingly becoming an independent policy actor.

“Science diplomacy presents a matchless opportunity, to address the political, demographic and environmental challenges of the age through the universal language and expression of scientific endeavour” (C. Moedas, 2015a). “Science diplomacy is as much about innovation in economic policy, as it is about neighbourhood policy, or even foreign policy... creating an enlarged area of scientific and technological excellence brings about economic stability” (C. Moedas, 2015b). The European Commission (EC) also suggest that “science diplomacy should be used more broadly as a means of EU external policies to ensure good governance and policy making, build mutual understanding and trust” (EC, 2016b).

Many of the defining challenges of the 21<sup>st</sup> Century have scientific dimensions and the tools, techniques and tactics of foreign policy need to adapt to a world of increasing scientific and technical complexity. The Royal Society, in partnership with the American Association for the Advancement of Science (AAAS), defined science diplomacy as a concept that can usefully be applied to the role of science, technology and innovation in three dimensions of policy (The Royal Society, 2011):

- Informing foreign policy objectives with scientific advice (science in diplomacy);
- Facilitating international scientific cooperation (diplomacy for science);
- Using scientific cooperation to improve international relations between countries (science for diplomacy).

As globalisation intensifies, as do science and innovation, ecosystems become a new way of organisation, where actors can get together and arrange their relationships. This adds more complexity to the international landscape, as new actors, stakeholders and sectors appear, and new infrastructure, competencies and capabilities are required as well as new governance models as more actors are involved. These trends also affect diplomacy and consequently the new ways of looking at the international relationships among actors. Diplomacy is also a good resource for multilevel governance.

Until recently, the focus has been more on science diplomacy, enabling scientific research partnerships and influencing foreign policies, but nowadays, as the interest is more focused on international collaboration on innovation, the focus tends to be on **innovation diplomacy**, with a higher focus on the market (K. Bound, 2016). This also poses new challenges to which policy makers will need to respond.

If science diplomacy can be defined as “the use of scientific interaction among nations to address common problems faced by humanity to build constructive, knowledge-based intentional partnerships” (The Royal Society, 2011), innovation diplomacy is different as it is considered to include public support for the following activities:

- Exerting soft power and influence through the international attractiveness to talent ideas and investment;
- Developing early stage international commercial partnerships among the stakeholders of the ecosystems for future growth and competitiveness;
- Creating the framework conditions for innovation partnerships to flourish;
- Encouraging public-private collaboration.

Innovation diplomacy encompasses the concept and practice of bridging distance and other divides (cultural, socio-economic, technological, etc.) with focused and properly targeted initiatives to connect ideas and solutions with markets and investors ready to appreciate them and nurture them to their full potential (E.G. Carayannis and D.F.J. Campbell, 2011).

Another variant of diplomacy, linked to policy, is science, technology and innovation diplomacy. Mainly because STI policies are “driving forces to reach challenges posed by globalisation. The capacities to generate scientific or technical advances, to innovate or attract talent are essential components to soft power public diplomacy and the country brand” (Spanish Government, 2016). That is to say:

- Contributing to solve challenges related to globalisation;
- Achieving long-term sustainable development;
- Promoting collaboration in international relations;
- Relevant element in public diplomacy;
- Ensuring a framework favourable for competitiveness in the context of open innovation.

The EU’s competence regarding science diplomacy (L. Van Langenhove, 2016) “is embedded in how science and technology policy is dealt within the EU’s treaties. It is, therefore, a shared responsibility”. The document classifies the science diplomacy practices under three categories:

- **Strategic tools:** policy documents that give directions on how to achieve and obtain the policy goals;
- **Operational tools:** policy instruments that put science diplomacy in practice;
- **Support tools:** to promote or facilitate science diplomacy activities.

STI is globally networked and opens new horizons for diplomacy, as it is now an important ingredient in the innovation process where companies could take advantage from global markets, competencies, skill and resources. Learning from others and exchanging experience are key sources of competitiveness.

There are several factors and trends in the development of STI that provoke a shift from science diplomacy to what we now call innovation diplomacy (J. Leijten, 2017), such as increasing complexity, increasing collaboration and openness; growth of knowledge society and agglomeration; global challenges and the complexity for international relations; technological nationalism versus innovation globalism; and new approaches in innovation that require an ecosystem which includes users in the innovation process as well as addressing proactively the needs of businesses.

In terms of foreign policies, these changes imply the shift from traditional diplomacy to a new concept of diplomacy based on innovation. The role of the public sector also changes, as within this new framework, it has a central role to play in promoting policies that support open innovation as well as the regulatory environment in which the actors of the ecosystem act. The public sector promotes tools and instruments that enable cooperation and favour the open circulation of knowledge to find innovative market solutions and new instruments to boost cooperation and better coordination among the agents from the ecosystem as well as to create demand for innovation.

## **The case of Latin America and the Caribbean and the European Union regarding STI diplomacy**

### **The EU-CELAC Cooperation Framework**

The first **European Research Area** (ERA) communication already focused on strengthening international cooperation (EC, 2000). In 2001 the ERA outlined a new approach and policy focusing on

the international dimension of scientific and technological cooperation, opening the ERA to the world and supporting the creation of closer political and economic relations (EC, 2001). The **Green Paper** reinforced cooperation on science and technology more centrally to the main external policy objectives, as science and technology have no boundaries (EC, 2007). This was followed by the **European Strategic Framework for International Science and Technology Cooperation** (EC, 2008) with several concrete actions. An Advisory Group was created for Science and Technology Cooperation (SFIC) in 2009 involving representatives of the EU Member States and the European Commission.

The Community of Latin American and Caribbean States or **Comunidad de Estados Latinoamericanos y Caribeños** (CELAC, 2018) was launched in 2011. It is an intergovernmental tool for dialogue and a regional political coordination mechanism gathering 33 Latin American and Caribbean countries and 600 million inhabitants. CELAC is the EU's official counterpart for the region-to-region summit process and strategic partnership. EU-CELAC Summits are organised every two years<sup>1</sup>; each of these events has facilitated further deepening of EU-LAC relations, intensified dialogue and cooperation on strategic issues<sup>2</sup> including science, technology and innovation, and culminated in the adoption of an **Action Plan** during the Madrid Summit in May 2010 (EC, 2012).

The EU is a key economic and political partner for CELAC countries and vice versa. Latin-American and the Caribbean (LAC) country cooperation on research, technology, development and innovation policy has a long history based on cultural roots and common concerns and interests. They share privileged relations since the first bi-regional summit, held in Brazil (European Parliament, 1999), that established a strategic partnership between them and these have stepped up significantly in recent years. The international dimension was already part of the first concepts for European Science and Technology cooperation, which were part of the broader EU international development cooperation. The **Joint Initiative for Research and Innovation** (JIRI) was established in 2010 to enhance EU-CELAC cooperation on science and research, to facilitate bi-regional dialogue on common priorities, to promote mutual policy learning and to ensure cooperation through biannual Action Plans (EC, 2018b). JIRI supports dialogue on common priorities and cooperation through biannual Action Plans. Thematic areas of cooperation are: bio-economy including food security, renewable energies, biodiversity and climate change, ICT and health. The annual **Senior Officials' Meetings** (SOM) provide a coherent framework for bi-regional dialogue and strategic cooperation.

The Action Plan was expanded at the **2013 Santiago de Chile EU-CELAC Summit** (Council of the European Union, 2013) and lasted until 2015. Science, research, innovation and technology was the first of eight key areas of activity prioritised. The Brussels Summit in 2015 (Council of the European Union, 2015a) announced the common EU-CELAC Research Area, which was adopted by the SOM in March 2016 with the aim to strengthen further the bi-regional partnership in research and innovation under three pillars: mobility of researchers, international outreach of research infrastructures and jointly addressing global challenges. In 2017, during the EU-CELAC Knowledge week (EC, 2017b), the EC announced the launch of a new initiative supporting CELAC countries for the implementation of the 2030 Agenda Sustainable Development Goals through research and innovation. The Summit concluded with a Declaration calling for further integration and highlighting the **Common Research Area as the existing policy framework supporting academic and scientific cooperation between the EU-LAC** (EC, 2017b). The last SOM meeting was held in San Salvador in October 2017 (EC, 2017c); reports covered health, ICT, bio-economy, energy and biodiversity. Participants recalled the importance of STI for the bi-regional agenda in line with what was agreed in the **Punta Cana Declaration** in January 2017 that advocated technology, scientific development and innovation to build knowledge societies and

---

<sup>1</sup> Founding Summit of Rio de Janeiro (Brazil) (1999); Madrid, Spain (2002); Guadalajara, Mexico (2004); Vienna, Austria (2006); Lima, Peru (2008); and Madrid, Spain (2010); Santiago, Chile (2013); Brussels, Belgium (2015); San Salvador, El Salvador (2017).

<sup>2</sup> Trade and investment, climate change, migration, the fight against illegal drugs, the promotion of human rights, education, cultural issues and in the fields of science and technology.



sustainable development. The meeting concluded on the need to support mechanisms to enhance the participation of CELAC and EU countries in EU research programmes.

Business support is also a priority for EU-CELAC cooperation and especially for SMEs through a win-win strategy where both regions could exchange knowhow and technology as well as create better market opportunities. The two regions co-operate closely at the international level across a broad range of issues and maintain an intensive political dialogue at all levels. EU-CELAC relationships are moving from a traditional cooperation model towards a learning model, where sharing experiences and learning from innovations appears to be decisive (OECD, 2014).

### **The EU-CELAC STI diplomacy**

In a rapidly changing world where new global challenges affect every country, STI is now one of the driving forces in social and economic progress as well as in promoting globalisation roles that will only intensify in the future.

STI diplomacy is well-developed in some countries of the world, such as the United Kingdom, France and Japan, but relatively unexplored or in the process of consolidation in others, such as Spain. In most LAC countries, the STI systems are not sufficiently structured and they lack STI diplomacy strategy. A suitable STI diplomacy strategy can be a very important factor in improving the STI capacity of a country and its international relations, and it can also contribute to the creation of a multinational space of scientific, research and innovation collaboration of interest for LAC countries.

STI diplomacy, within the framework of public diplomacy, reflects on the importance that each country and government grants to science and innovative technology in designing and implementing its foreign policy. To that end, most developed countries have adopted measures aimed at raising the profile of science and technology in decision-making on international affairs, strengthening their STI activities.

The EU is a key economic and political partner for LAC countries. The EU, international, and EU-Latin-America STI policy developments go back many years. The international dimension was already part of the first concepts for European science and technology cooperation, and – vice versa – science and technology were part of the broader EU international development cooperation from very early on. The EU is pushing for science diplomacy towards LAC countries at various levels and in numerous projects and initiatives (J. Selleslaghs, 2017).

The Global Innovation Index (2017), highlights Switzerland as the world's No. 1 innovation economy, followed respectively by Sweden, The Netherlands, the United States, the United Kingdom, Denmark, Singapore, Finland, Germany and Ireland, while China is No. 22. The ranking includes ease of doing business, scientific publications and international patent registrations. Most Latin American countries, except for Chile (46), lag well behind: Costa Rica (53), Mexico (58); Panama (63); Colombia (65); Uruguay (67); Brazil (69); Peru (70); Argentina (76); Dominican Republic (79); Paraguay (85); Ecuador (92); and Guatemala (98), which confirms the innovation gap. Innovation is increasingly globalised; top-ranked countries in the innovation index are those having more globalised innovation systems: universities, research centres and private companies. The United Kingdom, the world's No. 5 innovation leader, has one of the most internationalised systems of science and innovation. About 46% of scientific publications have a foreign co-author, and an exceptionally high proportion of the country's research is apparently funded from abroad. Those countries lagging in the GII have established policies that preclude collaboration with other nations.

Together, the EU and the CELAC number 61 countries (almost a third of the members of the United Nations), eight seats at the G20, and over one billion people (approximately 15.5% of the world's population). To date, 26 CELAC members have concluded trade agreements with the EU (apart from

the four Mercosur countries, and Cuba and Bolivia) and cooperation between the two regions is a reality (Council of the European Union, 2015b):

- Data from 2016 shows that CELAC is a major trading partner for the EU, the fourth largest behind the United States, China and Switzerland, although the market represented is relatively small. The main EU trading partners with CELAC were Germany, Spain, Italy, France and The Netherlands. Mexico and Brazil accounted for 57% of total trade with EU28 (A. Garcia-Herrero, F. Chiacchio, 2017).
- The EU is the leading foreign investor in CELAC countries having also conducted free trade agreements with groups of countries (CARIFORUM and Central America). Some countries, namely Mexico, Chile, Peru, Colombia and Ecuador, are in the process of establishing such agreements (EC, 2016a). The EC deals with the international cooperation policy in a wider framework and adapts to the evolving needs of partner countries at different stages of development (EC, 2018c).
- The EU is the most important provider of Official Development Assistance (ODA) in LAC countries (€3.4 billion for the period 2014-2020 and for specific countries). Other support comes from regional programmes (€925 million for Latin America and €346 million for the Caribbean), thematic programmes (the European Instrument for Democracy and Human Rights or the Non-State Actors and Local Authorities Programme), or the Partnership Instrument as currently the focus is on a partnership approach (EC, 2016a).
- The EU-CELAC relationships are based on a flexible approach, combining different levels of relationship (regional, sub-regional and bilateral) and complemented by bilateral relations with individual countries, sub-regional or regional groups, such as Mercosur, CARICOM/CARIFORUM, Pacific Alliance, SICA and UNASUR (EC, 2018b).
- There are several agreements with specific countries on science and technology: Argentina from 2001-2021; Brazil from 2007-2017; Chile from 2007-2022; and Mexico from 2005-2020. The ERC has also launched initiatives to boost opportunities for young scientists, supported by non-European funding agencies. For example, from 2015 in Argentina, through the Ministry of Science, Technology and Productive innovation; in Mexico through the Mexican National Council of Science and Technology (CONACYT); and in Brazil in 2016 through the Brazilian National Council of State Funding Agencies (CONFAP).
- EU-LAC strategic partnerships are in place through bilateral summits since 1999; the EU-CELAC agreements encompasses political dialogue and development of cooperation.
- The smart specialisation concept is being widely considered by several countries and regions in Latin America. The interest in this approach, primarily based on its enhancement of regional innovation capacities, is motivating territorial dialogues, participatory processes and collective vision related to the innovation perspectives of Latin America. From DG REGIO, an inter-regional and international dialogue has been established with countries in Latin America, which has allowed for the progression in the definition of smart specialisation strategies through regional cross-border cooperation. Collaborative projects in areas of interest in several Latin American regions have been implemented, enabling actions toward innovative and added-value sectorial specialisation.

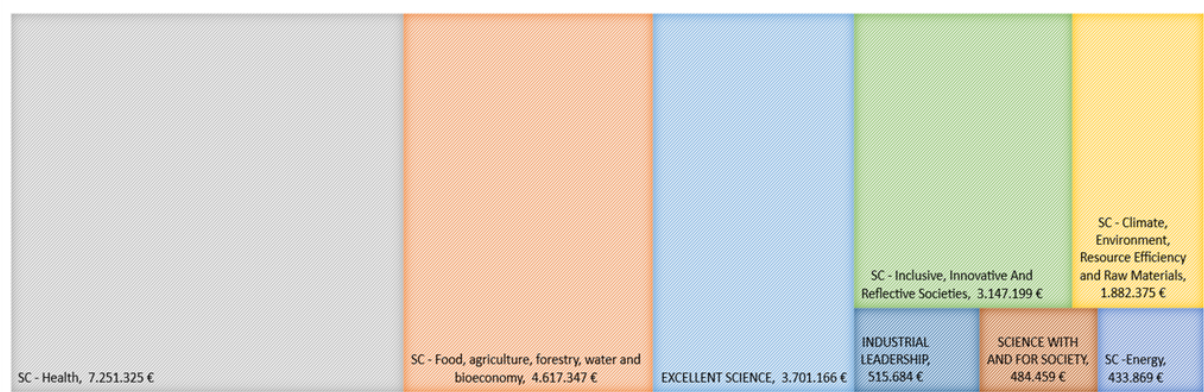
### **Relevant initiatives shaping EU-CELAC diplomacy**

The EU-CELAC cooperation has been ensured through an open innovation approach based on the EU research framework programmes on STI. Horizon 2020 is the world's largest multilateral programme, where all countries can participate. An increased EU-CELAC cooperation exists at bilateral and multilateral level (EU-LAC Foundation, 2018). CELAC research institutions, individual researchers, companies and scientists can participate. Framework Programme 7 (FP7) had participation from 747 organisations from the CELAC countries. Brazil was the country with the highest participation, followed by Argentina and Mexico. Food, agriculture and fisheries is by far the topic in which most

cooperation is found. Spain is the EU country coordinating most projects with CELAC countries. Spain and the United Kingdom are the countries with the highest participation in these projects. Higher, secondary education and research organisations are the more active ones from CELAC countries.

However, H2020 participation looks to date much lower than the participation in FP7, the previous research programme. Only 167 participants are involved in H2020 projects on research and innovation. The EC contribution so far is €22 033 423.81 . Cooperation is nowadays more concentrated in solving societal challenges (54%); followed by cooperation in health and food, agriculture, forestry, water and bio economy as shown in Figure 2 (EC, 2018h).

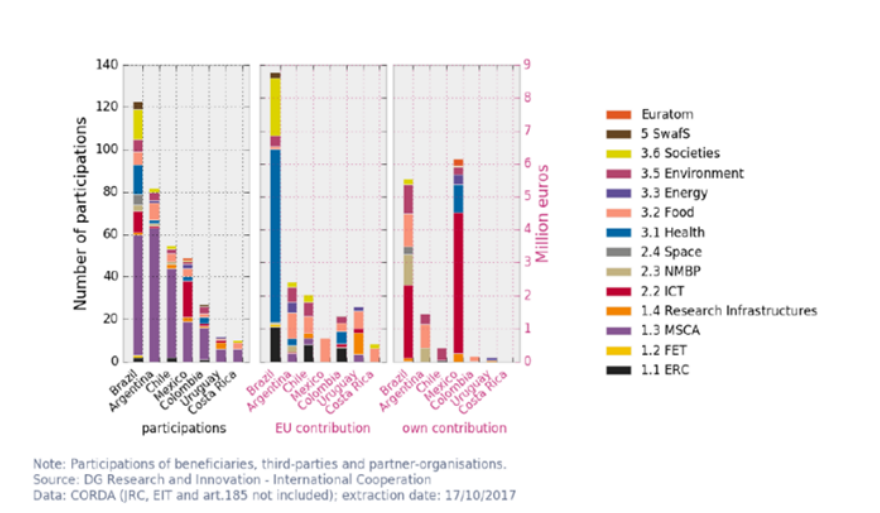
Figure 2: EU-CELAC cooperation per research programme



Source: Own elaboration from CORDIS database

Figure 3 shows in more detail the participants and the different contribution (EU and national) for the different priorities (EC, 2018h).

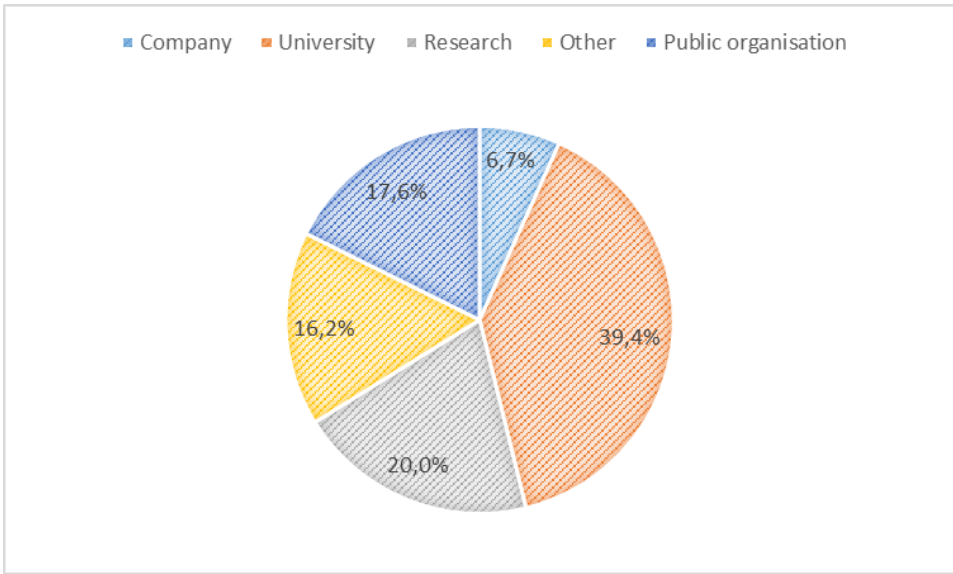
Figure 3: EU-CELAC cooperation per research programme and funding



Source: Roadmap for EU-CELAC S&T cooperation

Per type of organisation, Figure 4 shows that universities are the organisations from CELAC countries that are most active in participating (39%), followed by research organisations (20%) and public organisations (16.2%). Companies represent 18% of the participation (EC, 2018h).

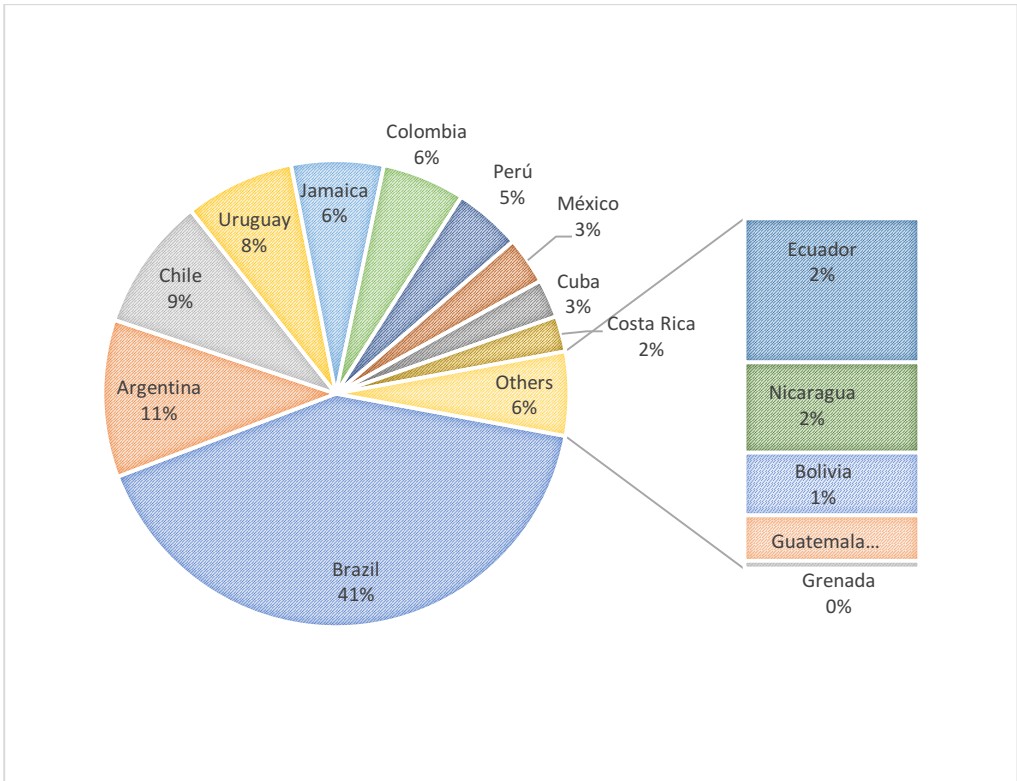
Figure 4: EU-CELAC cooperation per organisation



Source: Own elaboration from CORDIS database

Figure 5 presents which of the CELAC countries are participating most in H2020. Brazil is the country with highest participation (41%), followed at a distance by Argentina (11%) and Chile (9%) and Uruguay (8%) (EC, 2018h).

Figure 5: EU-CELAC cooperation per CELAC country



Source: Own elaboration from CORDIS database

Other relevant initiatives supporting EU-CELAC cooperation are:

- The **Erasmus Mundus** (2007-2013) and **Erasmus+** (2014-2020) programmes enable EU-LAC partnerships in higher education, through the programmes that intend to improve career prospects of students and to enhance academic cooperation and networking of higher education institutions. **Erasmus Mundus** funded 50 partnerships, from some 220 different LAC higher education institutions. Over 6650 students and academics have taken part in these academic mobility programmes from LAC: masters (21%), doctorates (23%) and post-doctorates (6%) representing 50% of the total mobilities, and undergraduates representing 39% of the total regional mobilities. It is expected that the support under the **Erasmus+** programme for the LAC region during the period 2014-2020 will enable 6500 student and staff mobilities as well as 100 capacity-building projects (EC, 2018d).
- **AL-INVEST** is an initiative to support the internationalisation of SMEs. Since 1994, it has been a flagship programme of EU cooperation with LAC. The programme promotes inclusive growth and aims at creating opportunities through facilitating the internationalisation of thousands of LAC small and medium enterprises (SMEs), in collaboration with their European partners. **AL-INVEST** began with a two-year pilot programme in 1994. The success of the first phase led to the approval of four subsequent programmes: **AL-INVEST I** – 1995-1999, **AL-INVEST II** – 1999-2004, **AL-INVEST III** – 2004-2007, **AL-INVEST IV** – 2009-2013 and now **AL-INVEST 5.0** (EC, 2018e).
- **EU-CELAC cooperation on regional innovation systems** through initiatives such as **EULAC-RIS** (EC, 2018f). Based on the EU experience, DG REGIO has supported several projects in LAC (Brazil, Argentina, Chile, Peru) since 2011 to exchange experiences between EU-LAC regional authorities and specialised agencies in policy setting, implementation and management with respect to clusters and SME innovation-inducing policies.
- **EU-CELAC Platform for funding agencies** represents a group of funding agencies wishing to collaborate in bi-regional STI. It serves as an information and communication platform and offers guidelines, as well as online working spaces, to facilitate and enhance the development of concrete joint initiatives, such as joint calls. It also supports the implementation of the **Common EU-CELAC Research Area**. The platform is supported by the **EU-CELAC Interest Group** which is a group of funding agencies from CELAC, EU Member States and Associated Countries wishing to cooperate in bi-regional STI collaboration. It builds on the collaboration experience and mutual trust established in the **ERANet-LAC** project 2013-2017 (FP7) (ERANet LAC, 2018).
- **ERANet-LAC project** intended to create a network of EU-CELAC on Joint Innovation and Research Activities funded by the EC for a period of three and half years (2013-2017). It aimed to contribute to the internationalisation of the ERA and to the goals of the Innovation Union. It addressed the need for an overall strategy tackling research and innovation, while facilitating the joint programming, in this case, under a bi-regional perspective (ERANet-LAC), fostered the cooperation between research and innovation actors while boosting the bi-regional cooperation, particularly at a funding agency level, considering the whole innovation cycle when designing common programmes.
- **ALCUE Net (2012-2017)- Latin America, Caribbean and European Union Network on Research and Innovation**, intended to establish an EU-LAC platform bringing together actors involved in research and innovation orientations, funding and implementation, as well as other relevant stakeholders from the public and private sectors and civil society. It supported policy dialogue on STI and fostered partnerships and capacity building to address social challenges (ALCUE Net, 2018).

- **The ELAN programme** (European and Latin American Business Services and Innovation) is an EU initiative that seeks to increase and diversify the EU economic presence in Latin America, by meeting the LAC demand for knowledge and innovative technology. ELAN also aims to boost the opportunities that both markets offer for EU and LAC SMEs, through two inter-dependent strategies:
  - EU-LAC Business Services (**ELAN Biz**): the main objective of these services is to provide up-to-date and comprehensive information services to European SMEs interested in doing business in strategic LAC countries;
  - EU-LAC Technology-Based Business Network (**ELAN Network**): the main purpose of this network is to generate technology-based business opportunities between EU-LAC SMEs.

**ELAN Network** (2015-2018) (ELAN Network, 2018) aims to establish an EU-LAC self-sustainable network of research and innovation actors, to promote lasting partnerships; to share knowledge and generate technology transfer in areas aligned with EU applied research; and to increase SME competitiveness through the generation of technology-based business opportunities. It is focused on the following sectors: Renewable Energies, Biotechnology and Bio-economy, Environmental Technologies, Health, Information and Communication Technologies (ICT), Nanotechnologies and New Materials. It is coordinated by TECNALIA, is initially composed of a group of organisations, leaders in their countries in the support, advocacy and mobilisation of the innovation and technology transfer. The **ELAN Network** aims to become a new specific instrument for cooperation and a new way to improve international relations and global alliances between EU-LAC. It achieves this by means of reinforcing and consolidation of the cooperation with the following middle-income group countries in LAC (Argentina, Brazil, Chile, Colombia, Costa Rica, Mexico and Peru) in different fields (such as economic, commercial, academic, business and scientific exchanges) and sectors identified at the EU-CELAC Science and Technology Joint Initiative for Research and Innovation. It conducts research aiming at better understanding of the factors behind EU-LAC innovative cooperation.

The **ELAN Network** brings together business support organisations, public sector actors and research and technology-based organisations from EU-LAC. These members work to bring the results of applied research to the market in collaboration between the EU and LAC. **ELAN Network** axes are:

- Vision that combines strategy, technology and business opportunities;
- Technology as a factor of competitiveness and welfare;
- Service provision for SMEs to enhance their competitiveness;
- Focus on implementing the results of technological research in companies;
- Co-generation / co-development of business opportunities.

The **ELAN Network** focuses on supporting SMEs to identify technology-based business opportunities; the partners, technologies and funding sources needed to develop specific business opportunities; training in technology transfer, entrepreneurship and technology-based businesses; consolidated networks of technology centres to support the development of new ideas, technologies and opportunities; and investors. The ELAN Network also undertakes activities to understand the cooperation between the EU-LAC through different activities, tools and methodologies. To reach that objective, the project focuses on:

- Understanding the needs of EU industry to enter into technology and innovation collaboration with LAC;
- Identifying research and innovation actors, mapping needs, capacities and supporting schemes in LAC partner countries;
- Identifying best practice and successful exemplary cases in the innovation field in EU-LAC partner countries;



- Providing a SWOT analysis of factors affecting EU-LAC collaboration in industrial innovation.
- **The EU-CELAC INNOVACT Platform, INNOVACT** (2017-2018) is a project financed by the EU and supervised by the Directorate General for Regional and Urban Policy of the European Commission (DG REGIO). In 2015, an EU-LATAM cooperation project identified and created a database on EU-LAC bi-regional value chains, generating knowledge for potential long-term partnerships where the EU experience could be both used and recycled. Based on these results, the **INNOVACT project** identifies and develops cross-border value chains, creating sustainable EU-LAC partnerships. The partnership formation has the ambitious goal to go beyond public institutions or national and regional authorities. It focuses on collaboration between agencies and players – public and private – who work on a day-to-day basis with the promotion of SME innovation, clusters and business competitiveness. This initiative supports cross-border cooperation and innovation in four border CELAC regions, covering six countries: Mexico – Guatemala; Colombia – Ecuador; Colombia – Peru and Peru – Chile. The identified value chains have sufficient critical mass and potential to generate added value and economic diversification with inter-sectorial impact. The support of these chains will permit new opportunities to be offered to the population, better labour conditions, to reinforce the capacities of its members and to promote economic sustainability. It is also foreseen that these value chains could promote better cross-border and European connectivity and complementarity. TECNALIA is a partner in this project, which is coordinated by Technopolis. The EU-LAC Foundation (EU-LAC Foundation, 2018) has recently issued an opinion article on innovation and technology where more information on INNOVACT can be found (INNOVACT Platform, 2018).

### **Challenges for EU-CELAC international cooperation on Science, Technology and Innovation**

The growth of LAC economies is slowing down, according to the **Economic Outlook 2017** (OECD, 2018), challenging the social, political and economic progress achieved during last decade. Approximately 35% of the population reached middle-class income level, but the inclusion of youth to labour market is not yet a reality. Young people represent 64% of the population and many live under vulnerable conditions and leave school for low paid jobs. Although work is being done to better link educational policies to the labour market, other transformations, mainly driven by technological changes, are still needed. The governments are now improving their capacity to diversify economic activities and compete in segments of higher value added as the LAC region has become predominantly middle-income. It is a particularly interesting market for several reasons:

- The strong pressure to diversify economies and reduce dependence on raw materials to achieve sustainable socio-economic growth;
- The productivity gap between SMEs and large companies that are increasingly becoming multinational actors;
- The real demand for European technologies and know-how to support the development of a more competitive and diversified SME sector that can integrate into global value chains.

The EU is a diversified economy that depends on a variety of SME from different sectors, which generate strong competitiveness and are market leaders in several innovation and technology fields. The crisis had economic consequences, especially for European SMEs, that were forced to look for other markets abroad and integrate into global value chains. Access to third markets is crucial for Europe's competitiveness, economic growth and innovation, as about 90% of global growth is expected to come from outside the EU and developing and emerging markets are expected to reach 60% of global GDP by 2030 (EC, 2018g).

Even though STI diplomacy has increased specific cooperation between EU-LAC, some important barriers that strongly and adversely affect these relationships still exist, which would need to be overcome with specific support, such as:

- Political instability, especially in CELAC countries;
- The difficulties to access foreign networks and build stable value chains;
- The need for specific capacities and a skilled workforce;
- Specific programmes that support this cooperation as well as public support to STI innovation from public authorities;
- Development of long-term cooperation models;
- Guidance of research and innovation agenda of target country;
- Joint identification of market opportunities of common interest;
- Combining funds to mobilise domestic financing in LAC countries that support EU research projects;
- Increase transparency in information about existing instruments.

Resulting from our research, the following challenges have been identified that still require action:

- **Definition of suitable strategies on STI diplomacy for EU-CELAC.** Traditional diplomacy has evolved to a new concept of diplomacy based on innovation, science and technology. STI diplomacy is well developed in some countries, but relatively unexplored or in the process of consolidation in others. In the majority of CELAC countries, STI systems are not sufficiently structured and they lack a STI diplomacy strategy. This is needed to improve the STI capacity of a country and its international relations, and it can also contribute to the creation of a multinational space of scientific, research and innovation collaboration of interest for CELAC countries. STI diplomacy reflects the importance that each country and government grants to science and innovative technology in designing and implementing its foreign policy.
- **Continuity and adapted policies and instruments to support EU-CELAC diplomacy.** Political stability is important for the success of international cooperation ties and networks. The construction of consolidated relationships and trust requires solid agreements, specific instruments and tools that are established with an enduring base and not dependant on political changes or policy cycles. It is also important to be patient and constant when establishing the instruments to enhance cooperation between EU-CELAC. During the first years, it is often expected to have tangible results, but qualitative results like the knowledge exchanged and the relationships created are key for success and would probably have a higher impact in the medium term. Policies, strategies and instruments to support diplomacy need to be focused and adapted to the dynamics of science, research and innovation and provided in continuity. The EU-CELAC diplomacy model has evolved since the first **Action Plan** was agreed in 2010. A chapter was already devoted to STI and supported by the creation of the JIRI. A common research area followed in the EU-CELAC Summit in June 2015 and was adopted by the SOM and JIRI at the meeting in 2016 under three main pillars: mobility of researchers, international outreach of research infrastructures and jointly addressing global challenges. Instruments in which public and private actions are integrated could also ensure continuity and independence from the specific policy cycle.
- **Flexible tools to build a successful and long-term EU-CELAC cooperation model.** EU policy in the field of STI has been based on cooperation since the beginning of the research programmes



in 1980. Since then, the launch of the ERA in 2000 has been key to tackle the challenges of globalisation, where the exchange of researchers and scientific results have been decisive. EU-CELAC STI cooperation also dates back to 2010 when the specific Action Plan for STI cooperation was launched and accompanied by other specific tools and groups, such as the JIRI. Joint EU-CELAC STI programming on common interests and an alignment of innovation agenda among R&I actors to achieve common approaches is still a clear need to be met. Cooperation must be suited to the requirements and needs of both regions. Joint initiatives should be promoted aiming at the identification of common challenges as well as of the specific technologies that could be applied to solve the challenges. Co-creation processes are highly recommended. International policymaking needs to support and/or guide these cooperation processes for this purpose; the creation of relationships and strong ties among both continent and regions is key. The EU-CELAC cooperation model is also in evolution, as STI has no frontiers; new cooperation models where the focus is now on a peer learning model have evolved. Learning from good practice and collaboration based on exchange should be encouraged as the EU-CELAC cooperation model moves from a traditional cooperation model towards a learning model where sharing innovative practice is crucial for competitiveness. A long-term perspective for policies is also a requirement for success.

- ***Internationalisation and integration of STI ecosystems as a powerful tool for growth.*** STI diplomacy fosters international cooperation and vice versa. Europe is a global leader in science, but to remain competitive, more science diplomacy and global scientific collaboration are needed. Stronger international research and technology cooperation could enrich innovative capacity and open up new opportunities and challenges at the global level for all the actors in the ecosystems. Internationally-agreed scientific and technical information is also essential for anticipating needs and for better and forward-looking policy decisions.
- ***Better connection among public and private actors in global ecosystems.*** Currently, roles within the innovation ecosystems are not well-defined and there appears to be a lack of connection between the public and private sectors. Furthermore, there is lack of clarity between the public innovation stakeholders (multitude of agents and many different initiatives) and the final users – micro enterprises or SMEs – who don't know where to find support for their innovation activities. Sometimes there is even competition between public agents with similar roles. There is also a lack of strong intermediate agents, agents that articulate innovation between the public and private sectors and between the three sides of the knowledge triangle (business, academia and research). Lack of confidence in institutions further hinders information flows and generation of synergies. Micro enterprises and SMEs are still far from the innovation and technology frontier, due to a lack of public resources, incentives, funds for investments, technology acquisition, etc. Ecosystems of public, private and third sector actors of the innovation chain that ensure the research and innovation that can work at the international level should be better supported, because not only innovation is open, ***but also science and the world.*** Digital technologies are not only making science and innovation more collaborative but also better connected at the international scale as well as more available and open to users and citizens, which in turn, can contribute to enhanced innovation outcomes. The level of development and integration of innovation systems in CELAC countries still leaves room for development. Some countries follow EU strategies and work on approaches to support their development but still work needs to be done to understand better the role of the different actors. This will also permit better understanding of who the

key players are and their roles in the cooperation strategy (companies, research-organisations, local/regional governments, etc.) to transfer the knowledge created by researchers to industry (business). Innovation is increasingly globalised and top-ranked countries in the innovation index are those having more globalised innovation systems within universities, research centres and private companies. This is a clear deficit within CELAC countries and it is considered that linking innovation ecosystems of EU-CELAC specific regions could generate significant mutual benefits. For this purpose, supporting the mobility of STI actors internationally as well as building capacity in STI at both national and international levels are considered important preconditioning factors.

- ***Use STI diplomacy as a tool for multilevel governance.*** Multilevel governance responds to a governance process where several actors are involved from different governance levels, from local to supranational. Within this governance model, the competences from decision making are shared. Diplomacy could help to reinforce relationships and cooperation between countries, to orchestrate a dialogue among member states, to elaborate the agenda on specific and common themes and to carry out international negotiations and relationships that are conditioned by the rapid economic, political and social changes and challenges of this century. STI diplomacy is practised in open frameworks, with a variety of actors and stakeholders representing diverse interests, in which different strategies are involved, therefore consensus and cooperation at international level is crucial for the success of these relationships. The EU-CELAC relationships are based on a flexible approach, combining different levels of relations (regional, sub-regional and bilateral) and complemented by bilateral relations with individual countries, sub-regional or regional groups. Multilevel governance make sense in this complex global environment society and environment and diplomacy should be used broadly “to ensure good governance and policy making, build mutual understanding and trust” (C. Moedas, 2015).
- ***Build and support EU-CELAC strategic partnerships.*** Although official partnership mechanisms exist since the bilateral summits were established in 1999, there is a need for strengthening innovation and market-oriented results in EU-CELAC cooperation. This could be achieved by developing a common innovation agenda and different tools to support STI, such as a research and innovation portal to better articulate the connection among countries. The concept of open innovation implies that collaboration is dynamic, networked, multi-collaborative, etc. and innovation results from complex co-creation processes involving knowledge flows across the entire economic and social environment. This co-creation takes place in different parts of the innovation ecosystem and requires knowledge exchange and absorptive capacities from all the actors involved, whether businesses, academia, financial institutions, public authorities or citizens. Evidence shows that EU-CELAC STI diplomacy has permitted both the supporting of and the push for better research and innovation results among both regions. The number of common projects not only focuses on supporting policy dialogue, but also on technological cooperation and business competitiveness, especially among SMEs, as well as on strengthening innovation systems. Actions and initiatives need to be planned not only top-down but also bottom-up, in which private actors such as companies and especially SMEs are involved. Public private partnerships, specific ecosystems, value chains, clusters or hubs that have proven efficient and complementary means for strengthening the partnerships should be supported.

- ***Institutional stability.*** Currently, the institutional instability produces constant changes in the definition of strategies and policies and the deployment of programmes. Changes in the staff of public institutions complicates relations with other agents (in the case of collaboration with EU agents). Institutional efforts to bring continuity to the activities would allow the mitigation of the political instability. The collaboration framework is also perceived as a hampering factor. EU agents face bureaucratic burdens when trying to apply for a public bid in CELAC countries. Conditions for a client-provider type of relationship are not optimal either, due to high operational costs (expensive travel, accommodation, etc.). These issues hinder the implementation of methodology or technology transfer projects. On top of this, while entering CELAC markets, companies also face challenges in terms of complex regulatory frameworks.
- ***Support the participation of CELAC countries in more EU research projects.*** CELAC agents and companies should be able to participate in EU initiatives, like H2020, as an integrative element that allows the building of trust and relationships, and the development of capacities in the CELAC participants. To reach this, initiatives to build capacity and train people from CELAC entities on European innovation support programmes, such as H2020, should be promoted. This seems especially important as CELAC participation in framework programme seems to have decreased from FP7. Brazil is the country which participates in the most EU-CELAC projects, by far, and both universities and research organisations are the most active participants. Food, agriculture, forestry, water and bio economy and health are the most typical thematic areas for CELAC participation. There is, however, a need for other types of collaboration activities based on a more continuous collaboration that would allow for mutual understanding, learning and knowledge transfer, through specific projects that are closer to the reality of the CELAC country needs. This would allow enhanced understanding of the ecosystem and would lay foundations for more strategic, long-term partnerships between regions and countries. One-shot projects are considered insufficient and have a high risk of leaving both sides unsatisfied with the project outcomes. Projects should also aim to cover the complete value chain to have greater impact.
- ***Sustainability of projects and actions.*** There is a lack of continuity of the projects in terms of local actions that would keep the momentum and continue the work started. This can be associated to a lack of policy definition, to weak deployment of policies, or to a lack of public resources needed to structure innovation or technology processes. A strong framework for collaboration backed-up by a clear strategy, policies and resources would allow a more continuous collaboration, which is a necessity to build strong links between EU-CELAC agents.

## Concluding remarks

Innovation is one of the main drivers of economic growth. Innovation systems and ecosystems are the natural framework where these innovations can flourish and be supported, not only regionally but also nationally and worldwide through global value chains. These ecosystems are opening and offering new opportunities and challenges globally, as they are becoming increasingly independent policy actors.

Diplomacy is also a concept in evolution that has moved away from diplomatic work to a common work focused on international collaboration on targeted initiatives. This also implies challenges for policies as driving forces to reach challenges posed by globalisation.

The EU-CELAC cooperation in STI is strong at different levels and enjoys political support. Although the cooperation has a long history, mainly based on cultural roots and common economic interests, the cooperation in STI is more recent and dates back to 2010, when the EU-CELAC Summit agreed on establishing the first EU-CELAC Action Plan that included a concrete chapter dealing with STI. The Joint Initiative JIRI was established and six SOM meetings organised to support the implementation of JIRI, as well as concrete groups focusing specific thematic and cross-cutting areas of joint interest. Apart from other actions, several EU-funded projects and programmes are evidence of the strategic tools in place to support the dialogue, such as international cooperation activities under the European Framework Programmes (FP7, H2020) AL-INVEST, INCO-NET, ALCUE NET, ERANET-LAC, EU-LAC HEATH, ELAN, ALFA – Latin American Academic Excellence, COSME, the Bilats with Mexico, Argentina, Chile and Brazil, LAIF – Latin America Investment Facility, ELAN Network, etc. EU-CELAC relationships are moving from a traditional cooperation model towards a learning model, where sharing experiences and learning from innovations appear to be decisive.

Challenges are at the global scale, thus common action on research is needed for those countries that have a specific need to solve a specific challenge. The EC is already supporting global research partnerships, as often research and innovation to tackle societal challenges is best implemented through global multilateral initiatives where solutions can be developed and deployed more effectively. Science diplomacy with a mission-oriented approach contributes to face the most pressing challenges of globalisation and relying on STI long-term goals could be better achieved. Policies need to be oriented to address public sector investment to catalyse economic activity, spark innovation, solve public problems, and lay the foundations for future economic growth as well as focus on problem-specific societal challenges, where many different sectors interact, rather than on the sectors themselves – as in traditional industrial policy.

Public policy support needs to be adapted and to suggest coherent measures that permit a change in the dynamics of science, research and innovation, giving direction to economic growth and innovation to tackle societal and technological challenges and better envision, justify, measure and assess public investments, in an eco-system of public, private and third sector actors of the innovation chain and ensure that research and innovation can work at the international level.

Therefore, specific evidence-based policies are needed to support favourable innovation ecosystems that promote innovation and growth, not only nationally but also internationally. Diplomacy is linked to all these challenges and interactions resulting from cooperation. The weight of STI diplomacy (Spanish Government, 2016) is increasing and therefore it is more important than ever for:

- Solving the most pressing challenges of globalisation;
- Achieving long-term sustainable development;
- Promoting collaboration and harmony in international relationships;
- As an instrument of soft power and country branding;
- Ensuring a framework that is favourable for the competitiveness of companies, by cooperating in R&D&I, in a context of open innovation;
- Adopting institutional and technological innovations;
- Building better trust in international relations;
- Exchanging a European innovation model and policy tools such as RIS3;
- Fostering high added value collaborations in specific technologies;
- Developing strong worldwide clusters and value chains.

## Bibliography

A. Garcia-Herrero, F. Chiacchio (2017). *The European Union with the Community of Latin America and the Caribbean: where do we stand?* (online) available at [http://bruegel.org/wp-content/uploads/2017/12/Research\\_Report\\_EU\\_CELAC\\_where\\_do\\_we\\_stand.pdf](http://bruegel.org/wp-content/uploads/2017/12/Research_Report_EU_CELAC_where_do_we_stand.pdf). Accessed in June 2018.

ALCUENET (2018). *Latin America, Caribbean and European Union Network on Research and Innovation* (online) available at <http://alcuenet.eu/>. Accessed in May 2018.

Cambridge Dictionary. *About Diplomacy* (online) available at <https://dictionary.cambridge.org/es/diccionario/ingles/diplomacy>. Accessed in June 2018.

E.G. Carayannis and F.J. Campbell (2011). *Open Innovation Diplomacy and a 21st Century Fractal Research, Education and Innovation (FREIE) Ecosystem*: Building on the Quadruple and Quintuple Helix Innovation Concepts and the “Mode 3” Knowledge Production System. Available from: <https://www.researchgate.net/publication/225717035>. Accessed July 2018.

C. Moedas (2015a). *The EU approach to science diplomacy*. European Commission at European Institute, Washington (online) available at [https://ec.europa.eu/commission/commissioners/2014-2019/moedas/announcements/eu-approach-science-diplomacy\\_en](https://ec.europa.eu/commission/commissioners/2014-2019/moedas/announcements/eu-approach-science-diplomacy_en)  
[https://ec.europa.eu/commission/commissioners/2014-2019/moedas/announcements/addressing-shared-challenges-through-science-diplomacy\\_en](https://ec.europa.eu/commission/commissioners/2014-2019/moedas/announcements/addressing-shared-challenges-through-science-diplomacy_en). Accessed in May July 2018.

C. Moedas (2015b). *Addressing shared challenges through Science Diplomacy: the case of EU–Middle East regional cooperation*. European Commission speech at Amman, Kingdom of Jordan (online) available at [https://ec.europa.eu/commission/commissioners/2014-2019/moedas/announcements/addressing-shared-challenges-through-science-diplomacy\\_en](https://ec.europa.eu/commission/commissioners/2014-2019/moedas/announcements/addressing-shared-challenges-through-science-diplomacy_en). Accessed in July 2018.

CELAC-Comunidad de Estados Latinoamericanos y Caribeños (2018). *Sobre CELAC* (online) available at <http://www.sela.org/celac/quienes-somos/que-es-la-celac/>. Accessed in April 2018.

C. Amacker (2011). *The functions of Diplomacy* (online) available at <http://www.e-ir.info/2011/07/20/the-functions-of-diplomacy/>. Accessed in June 2018.

Global Innovation Index (2017). *Interactive database of the GII 2017 indicators* (online) available at <https://www.globalinnovationindex.org/analysis-indicator>. Accessed in June 2018.

Council of the European Union (2013). *EU-CELAC Action Plan 2013-2015*. (online) available at [http://www.eeas.europa.eu/archives/docs/la/summits/docs/2013\\_santiago\\_summit\\_eu-celac\\_action\\_plan\\_en.pdf](http://www.eeas.europa.eu/archives/docs/la/summits/docs/2013_santiago_summit_eu-celac_action_plan_en.pdf). Accessed in June 2018.

Council of the European Union (2015a). *EU-CELAC Action Plan 2013-2015. EU-CELAC Summit 2015* (online) available at <http://www.consilium.europa.eu/media/23757/eu-celac-action-plan.pdf>. Accessed in June 2018.

Council of the European Union (2015b). *Facts and figures about the relations between the European Union and the Community of Latin American and Caribbean States. EU-CELAC Summit (2015)* (online) available at <https://www.consilium.europa.eu/media/23761/eu-celac-brochure-en.pdf>. Accessed in June 2018.

ELAN Network (2018). **European and Latin American Technology business based Network** (online) available at <https://www.elannetwork.org/>. Accessed in June 2018.

ERANet LAC (2018). **EU-CELAC Platform for funding agencies** (online) available at <https://www.eucelac-platform.eu/>. Accessed in June 2018.

L. Etzkowitz & H. Leydesdorff (1995 and 2000). **The Triple Helix, Quadruple Helix, ..., and an N-tuple of Helices: Explanatory Models for Analyzing the Knowledge-based Economy?** Amsterdam School of Communication Research (ASCoR), University of Amsterdam, The Netherlands (online) available at [loet@leydesdorff.net](mailto:loet@leydesdorff.net); <http://www.leydesdorff.net>. Accessed in June 2018.

EU-LAC Foundation (2018). **Newsletter on Innovation and Technology** (online) available at [https://gallery.mailchimp.com/ff018e5d48206d90c38bcf278/files/406abb1f-b7e1-409b-81c5-9f13860fe4b4/mayo\\_esp.pdf](https://gallery.mailchimp.com/ff018e5d48206d90c38bcf278/files/406abb1f-b7e1-409b-81c5-9f13860fe4b4/mayo_esp.pdf) Accessed in June 2018.

European Commission (2000). **Towards a European Research Area (ERA)**. Communication from the Commission to the Council, the European Parliament, the Economic and Social Committee and the Committee of the Regions of 18 January 2000. COM(2000)6 final (online) available at <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=LEGISSUM:i23010&from=EN>. Accessed in June 2018.

European Commission (2001). **The international dimension of the European Research Area**. Communication from the Commission COM (2001) 346 final. Publications office of the European Union, Brussels.

European Commission (2007). **Green Paper. The European Research Area: New Perspectives**. COM (2007) 161 final. Publications office of the European Union, Brussels.

European Commission (2008). **A strategic European Framework for International Science and Technology Cooperation**. Communication from the Commission to the Council and the European parliament COM (2008) 588final.(online) available at [https://ec.europa.eu/research/iscp/pdf/policy/com\\_2008\\_588\\_en.pdf](https://ec.europa.eu/research/iscp/pdf/policy/com_2008_588_en.pdf). Accessed in July 2018.

European Commission (2012). **EU-Community of Latin American and Caribbean States (CELAC) Summit Santiago de Chile, 26-27 January 2013. EU Relations with Latin America and the Caribbean** (online) available at [http://europa.eu/rapid/press-release\\_MEMO-13-15\\_en.htm](http://europa.eu/rapid/press-release_MEMO-13-15_en.htm). Accessed in June 2018.

European Commission-EC (2014). **For a European Industrial Renaissance**. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions COM (2014) 014 final. Publications office of the European Union, Brussels.

European Commission (2016a). **Fact Sheet. EU-CELAC relations** (online) available at [http://eeas.europa.eu/archives/delegations/haiti/documents/eu\\_celac\\_factsheet\\_fr.pdf](http://eeas.europa.eu/archives/delegations/haiti/documents/eu_celac_factsheet_fr.pdf). Accessed in June 2018.

European Commission (2016b). **Open Innovation, Open Science and Open to the World**. Publications office of the European Union (online) available at <https://ec.europa.eu/digital-single-market/en/news/open-innovation-open-science-open-world-vision-europe>. Accessed in May 2018.

European Commission (2017a). **European Innovation Scoreboard 2017**. Publications office of the European Union (online) available at <http://ec.europa.eu/DocsRoom/documents/24829>. Accessed in June 2018.

European Commission (2017b). *The VII EU-CELAC Senior Officials Meeting in Research and Innovation. First EU-CELAC Knowledge Week* (online) available at <http://ec.europa.eu/research/iscp/index.cfm?pg=latin-america-carib>. Accessed in June 2018.

European Commission (2017c). *JIRI. Seventh EU-CELAC SOM meeting on science and technology. San Salvador, El Salvador* (online) available at [https://ec.europa.eu/research/iscp/pdf/vii-eu-celac\\_joint\\_communique\\_2017.pdf](https://ec.europa.eu/research/iscp/pdf/vii-eu-celac_joint_communique_2017.pdf). Accessed in May 2018.

European Commission (2018a) *About International Cooperation and Development* (online) available at [https://ec.europa.eu/europeaid/general\\_en](https://ec.europa.eu/europeaid/general_en). Accessed in June 2018.

European Commission (2018b). *EU-CELAC relations* (online) available at [https://eeas.europa.eu/headquarters/headquarters-homepage\\_en/13042/EU-CELAC%20relations](https://eeas.europa.eu/headquarters/headquarters-homepage_en/13042/EU-CELAC%20relations). Accessed in June 2018.

European Commission (2018c). *About International Cooperation and Development* - DG DEVCO (online) available at [https://ec.europa.eu/europeaid/general\\_en](https://ec.europa.eu/europeaid/general_en). Accessed in June 2018.

European Commission (2018d). *Latin America - Erasmus Mundus and Erasmus+: Partnership in higher education* (online) available at [https://ec.europa.eu/europeaid/regions/latin-america/erasmus-mundus\\_en](https://ec.europa.eu/europeaid/regions/latin-america/erasmus-mundus_en). Accessed in June 2018.

European Commission (2018e). *Latin America - AL-INVEST - an initiative to support the internationalisation of SMEs* (online) available at [https://ec.europa.eu/europeaid/regions/latin-america/al-invest-regional-aid-programme\\_en](https://ec.europa.eu/europeaid/regions/latin-america/al-invest-regional-aid-programme_en). Accessed in June 2018.

European Commission (2018f). *EULAC-RIS: EU-Latin America cooperation on regional innovation systems* (online) available at [http://ec.europa.eu/regional\\_policy/en/policy/cooperation/international/latin-america/eulac-ris/](http://ec.europa.eu/regional_policy/en/policy/cooperation/international/latin-america/eulac-ris/). Accessed in June 2018.

European Commission (2018g). *SME Internationalisation beyond the EU* (online) available at [https://ec.europa.eu/growth/smes/access-to-markets/internationalisation\\_es](https://ec.europa.eu/growth/smes/access-to-markets/internationalisation_es). Accessed in June 2018.

European Commission (2018h). *CORDIS- Community Research and Development Information Service-database* (online) available at <https://cordis.europa.eu/>

European Parliament (1999). *América Latina/Caribe/Unión Europea: Primera Cumbre Declaración de Río*. Press Release: Brussels (29-06-1999) - Nr. (Presse ) (online) available at <http://www.europarl.europa.eu/delegations/noneneurope/idel/d12/docs/cumbrederio/declaracionfinales.htm>. Accessed in June 2018.

GR. Berridge, M. Keens-Soper and T.G. Otter (1994). *Diplomatic Theory from Machiavelli to Kissinger*. Palgrave McMillan (online) available at <http://drmarcjeanbernard.weebly.com/uploads/3/7/5/0/37501827/studies-in-diplomacy-geoff-berridge-h-m-a-keens-soper-thomas-g-otte-palgrave-connect-online-service-diplomatic-theory.pdf>. Accessed in June 2018.

H. Chesbrough (2006). *Open Innovation: Researching a New Paradigm* (online) available at <http://openinnovation.net/about-2/open-innovation-definition/>. Accessed in June 2018.

INNOVACT Platform (2018). *Promoting EU-CELAC Cooperation on cross- border Innovation support* (online) available at <http://www.innovactplatform.eu/>. Accessed in June 2018.

- J. Melissen (2005). *The New Public Diplomacy. Soft Power in international relations*. Palgrave McMillan (online) available at [http://culturaldiplomacy.org/academy/pdf/research/books/soft\\_power/The\\_New\\_Public\\_Diplomacy.pdf](http://culturaldiplomacy.org/academy/pdf/research/books/soft_power/The_New_Public_Diplomacy.pdf). Accessed in June 2018.
- J. Luk Van Langenhove (2016). *Tools for an EU science diplomacy*. Publications office of the European Union, Brussels.
- J. Leijten (2018) "*Exploring the Future of Innovation Diplomacy*". European journal of Journal of Futures Research 5(1). DOI: 10.1007/s40309-017-0122-8 (online) available at [https://www.researchgate.net/publication/322000342\\_Exploring\\_the\\_future\\_of\\_innovation\\_diplomacy](https://www.researchgate.net/publication/322000342_Exploring_the_future_of_innovation_diplomacy). Accessed in June 2018.
- J. Selleslaghs (2017). *EU-Latin America Science Diplomacy* (online) available at <https://www.elcsid.eu/working-papers>. Accessed in June 2018.
- K. Bound (2016). *Innovating together? The age of innovation Diplomacy within the Global innovation Index 2016*. NESTA. (online) available at [http://www.wipo.int/edocs/pubdocs/en/wipo\\_pub\\_gii\\_2016-chapter4.pdf](http://www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2016-chapter4.pdf). Accessed in June 2018.
- K. Schwab (2016). *The Fourth Industrial Revolution* (Online) available at <https://www.weforum.org/pages/the-fourth-industrial-revolution-by-klaus-schwab/>. Accessed in June 2018.
- OECD (2012). *Meeting Global Challenges through Better Governance: International Co-operation in Science, Technology and Innovation*. OCDE 2012 ISBN 978-92-64-17870-0.
- OECD (2014). *New EU development cooperation strategies in Latin America and the Caribbean* Conference, (online) available at <http://www.oecd.org/dev/dev-week-eu-development-cooperation-strategies-latin-america-caribbeans.htm>. Accessed in June 2018.
- OECD (2018). *OECD Economic Outlook* (online) available at <http://www.oecd.org/eco/outlook/economic-outlook/>. Accessed in April 2018.
- Spanish Government (2016). *Report on science, technology and innovation diplomacy Gobierno de España* (online) available at <https://www.fecyt.es/en/noticia/report-science-technology-and-innovation-diplomacy>. Accessed in April 2018.
- The Royal Society (2011). *New frontiers in science diplomacy* (online) available at <https://royalsociety.org/topics-policy/publications/2010/new-frontiers-science-diplomacy/>. Accessed in May 2018.
- United Nations, Department of Economy and social affairs (2017). *Sustainable development goals* (online) available at <http://www.un.org/sustainabledevelopment/sustainable-development-goals/>. Accessed in June 2018.



## About the author



Ms. Begoña Sánchez is Senior Business Development Manager at TECNALIA and part of the expert group Policies for Innovation and Technology. She has a Business Management Diploma from the I.E. Business School, a Diplôme d'Études Européennes from the Université Catholique de Louvain and a B.Sc. in Economics and Business (International Economics and Development) from the University of Basque Country. She is an expert project manager with a large experience in EC funded projects and strategic evaluations of public policies and research programmes. She conducts research on different aspects regarding innovation policies, ecosystems and strategies (e.g. Smart Specialisation). She participates in EU-LAC projects such as ELAN Network, INNOVACT.

The author would like to acknowledge the valuable contributions of Ezekiel Arrizabalaga and Javier Mendibil from TECNALIA to this publication.

The EL-CSID project  
is coordinated  
by the  
Institute for European Studies (IES)  
[www.el-csid.eu](http://www.el-csid.eu)

Institute for European Studies  
Pleinlaan 5  
B-1050 Brussel  
T: +32 2 614 80 01  
E: [ies@vub.ac.be](mailto:ies@vub.ac.be)  
[www.ies.be](http://www.ies.be)



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 693799.